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US005937392A

**United States Patent** [19]  
**Alberts**

[11] **Patent Number:** 5,937,392  
 [45] **Date of Patent:** Aug. 10, 1999

[54] **BANNER ADVERTISING DISPLAY SYSTEM AND METHOD WITH FREQUENCY OF ADVERTISEMENT CONTROL**

[75] **Inventor:** Charles D. Alberts, Bolton, Mass.

[73] **Assignee:** Switchboard Incorporated, Westboro, Mass.

[21] **Appl. No.:** 08/901,393

[22] **Filed:** Jul. 28, 1997

[51] **Int. Cl.<sup>6</sup>** ..... G06F 17/00; G06F 17/60

[52] **U.S. Cl.** ..... 705/14; 705/26

[58] **Field of Search** ..... 705/14, 26

[56] **References Cited**

#### U.S. PATENT DOCUMENTS

5,305,195	4/1994	Murphy	705/1
5,572,643	11/1996	Judson	395/200.48
5,721,827	2/1998	Logan et al.	395/200.47
5,724,521	3/1998	Dedrick	705/26

#### OTHER PUBLICATIONS

DoubleClick, "DoubleClick Debuts New Tool for Testing Creative on the Web", PR Newswire, May 20 1996, 2 pages, Apr. 1996.

Network World Fusion, "Network World Fusion Partners with Focalink Communications to Offer Unprecedented Value-Added Online Advertising Options", PR Newswire, Jun. 3, 1996, 3 pages.

C/Net, "C/Net: The Computer Network Unveils Revolutionary Internet Advertising Tools that Allow Custom Banner Ad Delivery Based on Demographic Information", PR Newswire, Dec. 6, 1995, 3 pages.

*Primary Examiner*—Allen R. MacDonald

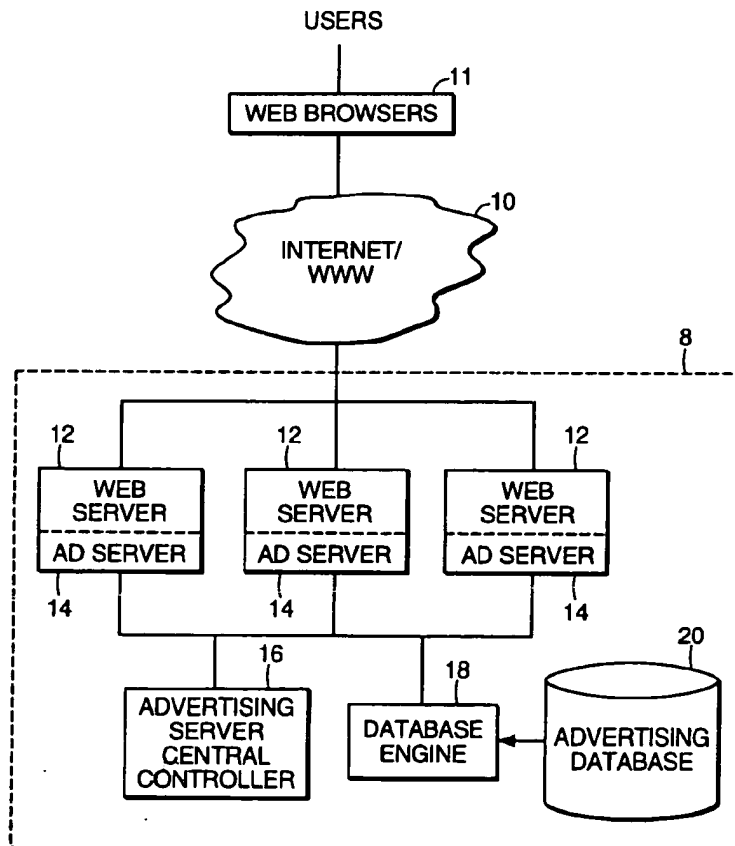
*Assistant Examiner*—James W. Myhre

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[57] **ABSTRACT**

An Internet advertising system has a database, a controller, and an ad server operating as part of a web server. The database has advertising campaign information, including identification information and frequency information for how often the ad is to be served. The ad server uses the campaign information from the database to control the relative ratios of serving ads, the distribution of ads throughout the day, and any triggering mechanisms for controlling what ads are served.

**19 Claims, 5 Drawing Sheets**



US-PAT-NO: 5937392

DOCUMENT-IDENTIFIER: US 5937392 A

TITLE: Banner advertising display  
system and method with  
frequency of advertisement  
control

DATE-ISSUED: August 10, 1999

INVENTOR-INFORMATION:

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Incorporated					

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FIELD-OF-SEARCH: 705/14; 705/26

REF-CITED:

PAT-NO	U.S. PATENT DOCUMENTS ISSUE-DATE	US-CL
PATENTEE-NAME		
<u>5305195</u>	April 1994	Murphy
N/A	705/1	<u>N/A</u>
5572643	November 1996	<u>Judson</u>
N/A	395/200.48	N/A
<u>5721827</u>	February 1998	Logan et al.
N/A	395/200.47	<u>N/A</u>
5724521	March 1998	<u>Dedrick</u>
N/A	705/26	N/A

OTHER PUBLICATIONS

Doubleclick, "Doubleclick Debuts New Tool for Testing Creative on the Web",  
PR Newswire, May 20 1996, 2 pages, Apr. 1996.

Network World Fusion, "Network World Fusion Partners with Focalink Communications to Offer Unprecedented Value-Added Online Advertsing Options",  
PR Newswire, Jun. 3, 1996, 3 pages.

C/Net, "C/Net: The Computer Network Unveils Revolutionary Internet Advertsing Tools that Allow Cusom Banner Ad Delivery Based on Demographic Information", PR Newswire, Dec. 6, 1995, 3 pages.

ART-UNIT: 277

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ABSTRACT:

An Internet advertising system has a database, a controller, and an ad server operating as part of a web server. The database has advertising campaign information, including identification information and frequency information for how often the ad is to be served. The ad server uses the campaign information from the database to control the relative ratios of serving ads, the distribution of ads throughout the day, and any triggering mechanisms for controlling what ads are served.

19 Claims, 7 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 5

US-PAT-NO: 5937392

DOCUMENT-IDENTIFIER: US 5937392 A

TITLE: Banner advertising display  
system and method with  
frequency of advertisement  
control

----- KWIC -----

Abstract Text - ABTX (1):

An Internet advertising system has a database, a controller, and an ad server operating as part of a web server. The database has advertising campaign information, including identification information and frequency information for how often the ad is to be served. The ad server uses the campaign information from the database to control the relative ratios of serving ads, the distribution of ads throughout the day, and any triggering mechanisms for controlling what ads are served.

Brief Summary Text - BSTX (5):

Such a system would be difficult to manage and operate if the numbers of serves per day for the different ads were different, and particularly if they were different significantly and by non-integral ratios. Different advertisers may want substantially different numbers of hits; e.g., one advertiser may want 100,000 hits per day for 10 days, another

advertiser may want 10,000 hits per day for only one day, and yet another may want 45,000 hits per day for a month. Another complication that occurs is that the number of hits can be approximated for a single day, but the number of hits can vary; if the number of hits increases on a particular day, an advertiser may want the ads distributed throughout the day so that not all ads are served early in the day. Alternatively, an advertiser may want a concentration or intensification of ads at particular times, perhaps in response to a profile of users, e.g., different times for children versus adults, or for people accessing the site from home versus work.

Brief Summary Text - BSTX (8):

The present invention is an advertising system for use with a large, publicly accessible network, such as the Internet. The system has at least one server for providing information in response to a request from a user. The system includes an advertising server, an advertising database, and an advertising controller for communicating with the ad server and the ad database. The database stores information about the ads, and the controller loads advertising campaign data, preferably in the form of tables, from the database to the ad server. The ad server uses the information to cause the ads to be served as desired.

Brief Summary Text - BSTX (9):



To obtain efficient distribution of the ads relative to each other and throughout the day (referred to here as "rotation control"), each ad is preferably associated with at least two counters that are operated such that the system can quickly determine which ad is to be served, without intensive computational overhead. Rotation control can be performed as desired, even with a large number of ads and with a wide range of variation and non-integral ratios between the number of times the ads are to be served. The ad server effectively makes a single list of ads and has a pointer that moves through the list until it reaches an ad to be served. To reduce steps for each serve, the system is designed so that the pointer need not move through more than one cycle of ads on the list without determining an ad to be served. Unused hits can be dedicated to other entities on an unpaid basis, such as to charities, but treated like other ads.

#### Detailed Description Text - DETX (2):

Internet 10 is a large interconnected network of computers, a subset of which is the World Wide Web. Users can access servers to obtain information over the web with a conventional web browser 11. In a system according to the present invention, an accessible web site 8 has a number of web servers 12 in communication with the Internet for responding to users by providing files or information from databases. Each web server 12 has an advertising (ad) server 14 that has known, conventional data insertion

tools for causing one or more ads, such as banner ads that also serve as HTML links, to be displayed when a page of information, such as a file or database information, is returned to a user who accesses web site 8.

Detailed Description Text - DETX (4):

Referring also to FIG. 2, ad servers 14 can be implemented with common gateway interface (CGI) scripts, or they can be implemented as software that runs as part of the web server process. When a user contacts one of web servers 12 with a query or a request for information, ad server 14 causes one or more ads to be served along with a response to that request

Detailed Description Text - DETX (5):

Each ad server 14 communicates with an ad controller 16 and with a database engine 18. Database engine 18, in turn, communicates with an advertising database 20. Referring also to FIG. 3, advertiser database 20 (which can be configured as and considered to be one database or multiple databases) has tables 30 that maintain information indicating parameters for the display of ads. These tables thus hold what is referred here to as advertising campaign data.

Detailed Description Text - DETX (7):

Referring particularly to FIG. 2, controller 16 is preferably implemented with programmed processing hardware, and with

software that can be maintained in any desired medium, such as memory chips or disks. Controller 16 accesses tables 30 in advertiser database 20 and provides the information from these tables to ad servers 14; the campaign data in tables 30 is converted into a portable "meta" format that is used by the ad server to build internal tables within storage in the ad server (or storage easily accessible to the ad server). The tables built by the ad server contain information derived from the "meta" information, such as the content of ad objects, ratios of serves, counters for rotation (discussed below), and the numbers of serves per ad for use in maintaining statistics and logging. The campaign data is thus held as a central store from which it can be distributed to the individual ad servers.

Detailed Description Text - DETX (8):

Controller 16 receives from ad server 14 statistics that indicate what ads have actually been served and how often these ads have been served; these statistics are used by the controller to provide active feedback to the ad server to ensure accurate control of the serving of ads. Controller 16 formats the statistics from ad servers 14 and provides these statistics to database engine 18 for storage in database 20.

Detailed Description Text - DETX (9):

Ad servers 14 also provide a usage log directly to database engine 18 and then to database 20 for storage. The usage log and

the statistics from controller 16 are used by database engine 18 to generate external reports for a system manager. These reports can be generated in one of many different ways, including hour-by-hour updates and/or daily reports on what ads were served so that the system manager can determine if the ads are being served at the proper ratios and with the proper distribution throughout the day. Corrections can thus be made if an inconsistency is seen between the expected and actual numbers of serves. Moreover, these reports can be used to provide to advertisers verification that their ads were actually displayed in the frequency and at the times expected, as well as the number of times the viewer clicked on the ad and the "click yield," i.e., the number of clicks per number of servers as a percentage.

Detailed Description Text - DETX (10):

The controller can also prepare on-line reports for each individual ad server, and for the entire web site. The logs are used to provide reports with known log analysis tools, while the statistics are used to provide feedback to the controller for the whole site. The controller can then request statistics from each of the ad servers directly and individually.

Detailed Description Text - DETX (11):

According to the present invention, ad servers 14 provide rotational control that ensures that ads are served a desired number

of times per day and with a desired distribution throughout the day, even with a large number of ads, a wide variation in ratios of hits, and/or wide variations of hits per day over multiple days. Each ad server 14 determines which ads are active based on the start and run length information from table 30; for each active ad, ad server 14 looks to the frequency to determine a number of serves per day for each ad. Server 18 then associates each active ad with at least counters that are implemented and configured for rotational control.

Detailed Description Text - DETX (12):

Referring also to FIG. 4, while the data for rotational control can be implemented in different ways, as shown here, ad server 14 builds a counter table 50. Associated with each ad, table 50 has a first column 52 with ads, and counters 54 with two counters.

Detailed Description Text - DETX (27):

While the counters are used to provide an appropriate balance in the numbers of serves for each ad relative to the others, other methods can be used to provide appropriate distribution throughout the day. FIG. 5 is a graph representing how usage might vary throughout one day from midnight to midnight (the graph here is merely illustrative and is not meant as a precise measure). Based on recurring patterns, such as when most people work, the time zones, and the day of the week, the number of hits to a particular service may be

predicted based on prior experience. The hours of the day can be broken up into time regions that may be less frequent during certain non-peak times and more frequent during peak times, and the frequency with which hits are calculated can be varied from numbers of hits per day to number of hits per time periods, with the time periods being reloaded from the database to the ad server by the controller on a more frequent basis throughout the day. This approach, in effect, alters the granularity with which the hits are monitored. With this approach, the time periods can vary in duration from short duration during peak times to longer duration during non-peak times.

Detailed Description Text - DETX (28):

Another way to implement such distribution is to provide control from the controller based on the statistics that are being provided from the ad server.

If the controller determines that the number of hits is higher for a given time period, it can cause the system to delay serving all paid ads or all ads of a particular type, and then only serve ads used fill in gaps between the total number of hits and the number of paid hits. This way, there may be some gaps, but the distribution is made more regular through the day.

Detailed Description Text - DETX (29):

The controller can build a model of traffic based on past traffic data, and then this model is used with current statistics

collected from the ad servers to make new "meta" tables on a regular basis, such as hourly. A simpler method, however, is to collect statistics from ad servers and to adjust the "meta" tables based on recent information. In this case, a dampening algorithm could be applied to prevent feedback oscillation.

Claims Text - CLTX (2):

a web server for providing information to users over the Internet in response to being accessed by the user, the web server including an advertising server for providing advertising information along with other information provided to users over the Internet;

Claims Text - CLTX (4):

an advertising controller for providing to the advertising server information from the database;

Claims Text - CLTX (5):

the advertising server using the information from the database to associate each ad with a number of counters and using the counters in determining which of the ads to serve, the counters being used to ensure that ads are served the desired number of times over the given time period relative to other ads.

Claims Text - CLTX (7):

3. The system of claim 1, wherein advertising server creates a list of ads, with each ad listed only once in the list, the